The following year, 1878, was one of remarkably copious rainfall in nearly all parts of the peninsula, with the exception of the Carnatic, where the rainfall did not exceed the average. In Hyderabad it was greater than that of any other year since regular registers have been kept; and, on the general average of the peninsula (excluding the Carnatic), it is approached only by that of 1874 and 1882.

Finally, the Carnatic maximum of 1884 coincided with a small excess in Hyderabad and with a larger excess in the north-west of the peninsula (the Central Provinces, Berar, Khandesh, the Konkan, and Guzerat); but this was due to independent conditions. In Mysore, Bellary, Malabar, the Deccan, the Northern Circars, and Orissa, the rainfall of the year was more or less deficient, especially in Mysore, where the fall was only three-fourths of the average.

It may, then, be considered as demonstrated that the apparently periodical variation of the Carnatic rainfall is by no means representative of a similar variation in that of Southern India generally; and I might here conclude the discussion, were it not that the independent evidence of a certain apparent regularity in the recurrence of droughts and dearths seems to require a few words of notice.

At page 21 of the Report of the Indian Famine Commissioners is given a list of all the serious droughts, and consequent seasons of dearth, that have affected India during the last century. Selecting those that have chiefly affected some part of the peninsula, we have the following:—

Droughts.	Intervals.
1782	
1791	9 years.
1802	11 ,,
1806	4 ,,
1812	6 ,,
1823	11 ,,
1832	9 ,,
1844	12 ,,
1853	9 ,,
1865	11 ,,
1876	11 ,,

Omitting that of 1806, which divided the ordinary interval into two, the mean interval is 10·36 years, and the deviation from this mean in no case amounts to two years. According to Wolf's table, the years of minimum sunspots and their intervals were:—

Sunspot Minima.	Intervals.
1784	
1798	14 years.
1810	12 ,,
1823	13 ,,
1833	10 ,,
1843	10 ,,
1856	13 ,,
1867	11 ,,
1878	11 ,,

the mean interval being 11·18 years. The coincidence of these mean intervals is hardly so close as might be anticipated were there any real physical interdependence between recurrent phases of the sun's condition, and the recurrence of the droughts. And a comparison of the dates in detail brings to light further discrepancies. Thus the years of drought vary in their relations to the nearest years of minimum sunspots as follows:—

One, midway between two sunspots minima; seven years distant from each;
One, four years earlier;
One, three years earlier;
Three, two years earlier;
One, one year earlier;
One, coincident;
One, one year later;
One, two years later;
One, four years later.

Omitting the first (that of 1791), which occurred four years after a year of maximum sunspots, and midway between two minima, in an unusually prolonged cycle, the years of drought, on a general average, anticipated the sunspot minima by somewhat less than a year, instead of following the minima, as might have been expected on the hypothesis of the former standing to the quiescent condition of the sun in the relation of effect to cause.

I should not, however, hastily conclude from these facts that there is no relation between the recurrence of drought in Southern India, and the periodical variation of the solar photosphere; but merely that the interdependence of the two classes of phenomena, if real, is far from being simple and direct, and also that other and, as far as we know, non-periodic causes, concur largely in producing drought. If we accept the conclusions, drawn in the first part of this note, as to the highly probable periodicity of the Carnatic rainfall, one must admit that there is, in that province, a recurrent tendency to drought at eleven-year intervals, though it does not always culminate in drought of disastrous intensity; and this epoch anticipates by about two years that of the sunspot minimum. This tendency is evidently much weaker in other parts of the peninsula; and in Northern India there is some indication of a tendency to the recurrence of drought about the time of maximum sunspots, as in 1803, 1837, 1838, and 1860—all years of disastrous drought in Northern India; and the experience of late years has demonstrated that these droughts generally extend to the northern provinces of the peninsula.

HENRY F. BLANFORD.

NOTES.

WE print elsewhere a report of the speeches delivered by Mr. Goschen and by some members of the influential deputation who waited upon him last Thursday to press the claims of University Colleges. The deputation had certainly no reason to complain of the manner in which they were received. Mr. Goschen, speaking as Chancellor of the Exchequer, was of course obliged to adopt a cautious tone; but it was plain enough that those who addressed him represented a cause with which he had strong personal sympathy. His promise that the Government would give the matter "its most serious attention," means, we may hope, that the principle of State aid for University Colleges has been practically accepted.

ON Monday the foundation-stone of the Imperial Institute was laid by the Queen. No representative of science, as such, was invited to be present at the ceremony, and NATURE did not receive a Press ticket. Evidently science is to have little to do with the New Institute.

THE Prussian Society for the Promotion of Industry has recently offered a prize of about £150 for the most exhaustive critical comparison of all kinds of existing bronze, tombac, and brass alloys, used or recommended for machinery, giving their chief properties with regard to resistance, ductility, friction at different temperatures, malleability, electrical conductivity, behaviour with acids, hydrogen and carbon sulphides, chlorine, and other strongly corrosive substances met with in practice. The same Society also offers a gold medal and £250 for the best work on light and heat radiation of burning gases. The time limit in the former case is the end of 1887; in the latter, the end of 1888.

The National Association for the Promotion of Technical Education has now been formed. A meeting of persons interested in the movement was held on the 1st inst. at the rooms of the Society of Arts, Adelphi. Lord Hartington presided, and among those present were Lord Rosebery, Mr. John Morley, Sir Lyon Playfair, Sir John Lubbock, and representatives from Colleges, technical schools, trade-unions, School Boards, national Societies, and Chambers of Commerce.

About 40 members of Parliament were also present. Lord Hartington, in opening the proceedings, said their object was not so much to stimulate public interest in this great question as to consider from a practical point of view the channels into which such interest ought to be directed. He had been struck by the facts relating to technical education at home and abroad which had been presented in very voluminous form to the public in the reports of our Consuls. We had in this country attained to a great industrial and technical supremacy in the world. We had attained this position partly by the possession of great resources in coal and iron and other industrial materials, partly from the character, energy, and industry of our people, and partly—and here he might be trenching upon controversial grounds—from the fact of our having adopted a sound commercial policy. At the same time, concurrently with our attainment of this supremacy, wonderful scientific discoveries had been made, and more and more science was being applied to the industrial occupations of the world. Other nations had been quick to perceive this, and were striving to make their position equal to ours by developing at immense cost to the State and public funds that scientific instruction which would enable their manufactories and workmen to compete successfully with ours. If we were passive in the matter—if we were indolent—it was conceivable not only that foreign nations would rival us, but they might also succeed in passing us, with consequences which it would be difficult to contemplate. If we were satisfied to go on as we were, if we were content to rely in the future as we had done in the past on those advantages which had given us our present position, and if we did not think it necessary to organize more completely our system of technical instruction than at present, that decision should be the result of deliberate and well-formed consideration and not the result of apathy or indolence. Sir Lyon Playfair, moved that the Association be formed, that Lord Hartington be invited to become President, and the following gentlemen Vice-Presidents:—Lord Granville, Lord Ripon, Lord Rosebery, Lord Spencer, the Bishop of London, Mr. Broadhurst, Prof. Huxley, Sir John Lubbock, Mr. Mundella, Sir Lyon Playfair, Sir B. Samuelson, Prof. Stuart, Dr. Sullivan, Sir R. Temple, and Prof. Tyndall. Mr. John Morley, in seconding the motion, said the time for further inquiry had gone past, and the time had arrived when they could no longer with wisdom, or even with safety, delay the movement they that day commenced. The resolution was carried unanimously. Sir J. Lubbock moved the appointment of an executive Committee, which was carried; as was a motion, made by Mr. Mundella and seconded by Lord Rosebery, that those present be invited to join the Council. A discussion ensued on the proposed objects of the Association, after which Sir B. Samuelson moved, and Mr. Howell seconded, a resolution inviting the assistance of large towns and the chief industrial centres. The motion was duly carried, and votes of thanks closed the proceedings.

IN his statement on Monday about the progress of business in the House of Commons, Mr. W. H. Smith said: "There is a measure for promoting technical education, which we have every reason to believe will be accepted unanimously by the House—at all events, we hope that a very slight discussion will be sufficient to pass that measure into law."

ON July 25, 1837, the first practical essay in telegraph working was made by Messrs. Cooke and Wheatstone between Euston and Camden Town. In the material order of things few more magnificent triumphs have ever been achieved, and it has very properly been decided that the fiftieth anniversary of the occasion shall be celebrated. Some time ago an influential Committee was formed to take the matter into consideration, and the other day there was a well-attended meeting of the members at the offices of the Society of Telegraph-Engineers and Electricians. Mr. Preece, F.R.S., was appointed chairman. In his opening speech he said they had met to make arrangements for a dinner which was to be given in celebration of the jubilee of the telegraph. It was the success of the essay made by Messrs. Cooke and Wheatstone that led to the association of Robert Stephenson, George Parker Bidder, Brunel, and other well-known men in those days, with the telegraph, and from that little beginning they had seen how the telegraphs had spread all over the face of the earth. In England, where the first step was taken, they had succeeded in keeping well in the van, and it was only fitting that such an important event, probably the greatest event that had happened during the long reign of Her Majesty, should be celebrated, and that those who had been instrumental in bringing telegraphy to its present great position should meet together and talk over old times. It so happened that there were several reasons why the celebration should not take place on July 25, which was really the proper day. In the first place, Mondays were busy days with legislators in their House over the way, and it would be extremely difficult to get many of those whom they hoped to attract if the proposed dinner took place on a Monday; again, it was quite impossible on a Government night, like Monday, to get the Postmaster-General, who, it was thought, should take the chair, to attend; and, further, on July 23 there was to be a great naval review, and a great many who would wish to attend the dinner would not be able to get back until late on Monday afternoon. For those reasons it would be difficult to hold the dinner on the 25th, and Wednesday, the 27th, had been suggested as meeting everybody's convenience. He therefore moved that a dinner be held on July 27 to celebrate the jubilee of the telegraph. Mr. Willoughby Smith seconded the motion, which was unanimously agreed to. Discussion followed respecting matters of detail, and an Executive Committee was elected, consisting of Messrs. W. H. Preece, E. Graves, C. H. B. Patey, C. E. Spagnoletti, A. Siemens, and A. Stroh, with Messrs. H. Alabaster and C. H. W. Biggs as Honorary Secretaries, and Mr. F. H. Webb, Secretary of the Society of Telegraph-Engineers and Electricians, as Acting Secretary. The guarantee fund was at once opened, and names were soon down for upwards of £100. The meeting was adjourned until Tuesday, the 12th inst., when the Executive Committee will report as to the progress of the arrangements.

A NUMBER of vacation courses in Natural Science will shortly be started in Edinburgh. During the present summer there will be two courses—one on Practical Botany, conducted at the Royal Botanic Gardens of Edinburgh by Mr. G. F. Scott Elliot, an assistant to the Professor of Botany; another on Practical Zoology, conducted at the Scottish Marine Station, Granton, Edinburgh, by Mr. J. Arthur Thomson, Lecturer on Zoology in the School of Medicine, with the co-operation of Mr. J. T. Cunningham, the Superintendent of the Station. These courses ought to be of great service to teachers and others occupied during the University terms, for whom they are primarily intended.

WRITING to us from Tashkend on June 12, M. Wilkins says that the city of Vernoje was completely ruined by the earthquake of June 9. More than 800 bodies had been excavated. "The disaster," he says, "is beyond description. Mud and water are said to flow abundantly from the disturbed mountains to the scene of the catastrophe, and many crevasses are noticed in the ground. The exact time of the tremendous shock is given as 4h. 35m. local time. At 4h. 18m. (Tashkend local time) on the same morning, we felt here a flat wave which set in motion suspended objects. Taking into account the difference of longitude between Tashkend and Vernoje and the consequent difference of time, it appears that the wave travelled in a straight line more than 400 miles in the short time of 13·5 minutes, crossing on the way, in a diagonal direction, the whole western half of the Thian Shan range."

ON June 30 a Philippine Exhibition was opened at Madrid by Queen Christina. The most important exhibits are specimens of the natural products, vegetable and mineral, of the Philippine Islands. Some forty natives, male and female, with their native houses and arms, are present. The late King of Spain started the idea of a permanent Colonial Museum, to contain the mercantile products of the Spanish colonies. The opening of this Exhibition is regarded as the first step towards the realization of his scheme.

ANOTHER instalment of his valuable work on high temperature dissociations has just been given forth from the laboratory of Prof. Victor Meyer, at Göttingen. The molecular condition of phosphorus, arsenic, and antimony at the highest accessible temperatures has been the subject of this recent work, and the following are the experimental results obtained. As is well known, the experiments of Deville and Troost brought to light the fact that as high as 1040° in the case of phosphorus, and 860° in the case of arsenic, the observed densities are such as can only be explained on the supposition that the molecules of these elements consist of four atoms. J. Mensching and Victor Meyer now show that as the temperature is gradually raised to a red heat the molecular weights begin to diminish—that is, the four-atom molecules commence to break down—and at a white heat so large a number are dissociated that the values obtained for the vapour-densities approximate to those required on the supposition that the molecules each contain but two atoms. Hence, at a white heat the vapour-densities of phosphorus and arsenic are normal, and the molecules consist of the usual two atoms. In the case of antimony, no thoroughly trustworthy work has hitherto been published as to its molecular state, but it has been generally supposed to consist also of four-atom molecules. Mensching and Meyer, however, find that it behaves quite unlike phosphorus and arsenic, inasmuch as immediately on volatilization its density is found to correspond to a molecule of but three atoms, and although dissociation continues to the limit of terrestrially procurable temperatures, yet when this is attained, the level of the normal state is not reached, and more definite results must perforce be deferred until, by some ingenious device, temperatures far higher are obtainable.

THE Royal Meteorological Institute of the Netherlands at Utrecht has recently published its *Jaarboek* for 1886, containing observations taken three times daily at ten places, and daily rainfall values at eighty stations. These volumes, which have now been regularly issued for thirty-eight years, form one of the most complete series of meteorological observations in Europe, and they also contain valuable discussions on the climatology of distant parts. The volume now in question contains observations taken at San Salvador (on the Congo) for 1885, and at Djedda (Arabia Felix), Paramaribo (Dutch Guiana), and Culebra (Panama Canal) for 1886. The Director of this Institution (Dr. Buys Ballot) first enunciated the law that now bears his name, showing the universal relation of the direction of the wind to barometric pressure, which has been so instrumental in popularizing weather knowledge. This Office also deals largely with maritime meteorology, and has published a long series of papers on this subject entitled "Uitkomsten van wetenschap en ervaring," as well as wind charts for the various oceans.

AN unusual number of foreign men of science will be present at the Manchester meeting of the British Association for the Advancement of Science. The following is the first list of foreigners who have accepted invitations to attend the meeting:—*Section A* (*Physics and Mathematics*): Cleveland Abbe, Meteorological Office, Washington; Von Hefner Altneck, Berlin; A. Cornu, Ecole Polytechnique, Paris; A. Crova, Montpellier; J. R. Eastman, U.S. Naval Observatory; W. Foerster, Director of the Berlin Observatory; W. de Fonvielle, Paris; A. Horstman, Heidelberg; F. Kohlrausch, Professor of Physics, Würzburg; A. Kundt, Professor of Physics, Strassburg; William Libbey, Princeton College, N.J.; G. Lippmann, Paris; R. Lipschitz, Professor of Mathematics, Bonn; Malcolm McNeill, Princeton College, N.J.; O. E. Meyer, Breslau; G. Quincke, Professor of Physics, Heidelberg; Schering, Director of the Observatory, Göttingen; Ernst Schroeder, Karlsruhe; J. Violle, Ecole Normale, Paris; E. Warburg, Professor of Physics, Freiburg; H. Wild, St. Petersburg; A. C. Young, Princeton College, N.J. *Section B* (*Chemistry*): A. Bernthsen, Heidelberg; J. W. Brühl, Freiburg; Caro, Mannheim; Le Chatelier, Paris; F. W. Clarke, Washington; De Clermont, Paris; F. B. Fittica, Marburg; R. Fittig, Strassburg; Hempel, Dresden; Reinhardt Hoffman, Biebrich; A. Ladenburg, Kiel; J. W. Langley, University of Michigan; A. Lieben, Vienna; C. Lieberman, Berlin; Oscar Liebreich, Berlin; Lunge, Zurich; J. W. Mallet, University of Virginia; C. A. Martius, Berlin; Mendelejeff, St. Petersburg; Menschutkin, St. Petersburg; Lothar Meyer, Tübingen; Noelting, Muhlhausen; Pauli, Höckst; Silva, Paris; G. Wiedemann, Leipzig; Otto Witt, Berlin; J. Wislicenus, Leipzig. *Section C* (*Geology*): E. Cohen, Greifswald; H. von Dechen, Bonn; Anton Fritsch, Prague; Alfred Nehring, Berlin; Abbé Renard, Bruxelles; F. Zirkel, Leipzig. *Section D* (*Biology*): A. de Bary, Strassburg; Von Boddaert, Cutsem; C. W. Braune, Leipzig; A. Chauveau, Paris; F. Cohn, Breslau; C. Dervalque, Liége; C. Gegenbauer, Heidelberg; Asa Gray, Harvard College, Cambridge, U.S.; W. His, Leipzig; A. Hubrecht, Utrecht; Ch. Julin, Liége; F. Kühne, Heidelberg; Count von Solms Laubach, Göttingen; Lortet, Lyon; Marey, Paris; C. S. Minot, Harvard College; G. S. Morse, Salem, Mass.; P. Preyer, Jena; Pringsheim, Berlin; J. von Sachs, Würzburg; De Saporta, Aix; A. Weismann, Freiburg; R. Wiedersheim, Freiburg. *Section E* (*Geography*): Comodore Jansen, The Hague; M. Lindemann, Bremen; M. Venukoff, Paris. *Section F* (*Economic Science*): Carl Greven, Leyden; Dana Horton; Judge Mackay; A. de Marcoartu, Madrid; Carl Menger, Vienna; *Section G* (*Engineering*): Thos. Egleston, Washington; J. B. Francis, Past President of the American Society of Civil Engineers; A. Gobert, Bruxelles; Quinette de Rochemont, Havre; R. H. Thurston, Sibley College, Cornell University. *Section H* (*Anthropology*): Dr. O. Finsch; Marquis de Nadaillac, Paris.

MESSRS. MARCUS WARD AND CO. will publish, early this autumn, a work, in two volumes, on the Canary Islands. The writer, Mrs. Olivia M. Stone, author of "Norway in June," visited with her husband all the islands of the group—a feat which had never before been accomplished by English people. Illustrations from photographs taken during the tour, and eight maps made from the author's personal observations, will accompany the letterpress.

IN a letter printed by us last week, describing a meteor which was seen in West Sussex by daylight, the meteor is said to have "disappeared near the *meridian* of Antares." For "meridian" read "position."

THE additions to the Zoological Society's Gardens during the past week include three Blotched Genets (*Genetta tigrina*) from South Africa, presented by Gen. J. J. Bisset; an Ocelot (*Felis pardalis*) from South America, presented by the Earl of Dudley; a Barn Owl (*Strix flammea*), British, presented by Mr. —— Wickham; a White-tailed Sea Eagle (*Haliaetus albicilla*), European, presented by Mr. G. J. Mayer; a Ceylonese Jungle Fowl (*Gallus stanleyi*) from Ceylon, presented by Mr. Hugh Neville; six Corn-Crakes (*Crex pratensis*), British, presented by Mr. G. J. B. Willows; a Magpie (*Pica rustica*) from France, presented by Mr. Walter H. Ince; a Yellow-fronted Amazon

(*Chrysotis ochrocephala*) from Guiana, deposited; six Chinchillas (*Chinchilla lanigera*) from Chili, a Burrowing Owl (*Speotyto cunicularia*) from Buenos Ayres, two Hoopoes (*Upupa epops*), British, a Gould's Monitor (*Varanus gouldi*) from Australia, purchased; two Mule Deer (*Cariacus macrotis*), a Yellow-footed Rock Kangaroo (*Petrogale xanthopus*) born in the Gardens; two Blood-breasted Pigeons (*Phlogœnas cruentata*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

RELATIVE POSITIONS OF THE PRINCIPAL STARS IN THE PLEIADES.—We have received vol. i., part 1, of the Transactions of the Astronomical Observatory of Yale University, containing an important paper by Dr. W. L. Elkin, giving the results of his researches with the Yale heliometer on the relative positions of sixty-nine stars situated in the above-mentioned group. The work consists, in reality, of two independent triangulations: one resting on measurements of the distance of each star in the group from each of four stars situated near its outer limits, so that nearly the entire group is inclosed symmetrically by the quadrilateral formed by them; the other resting on measurements of distance and position-angle from Alcyone, the central star of the group. These two independent determinations are in very satisfactory agreement, and Dr. Elkin has thus furnished a most accurate catalogue, for the epoch 1885, of the relative positions in R.A. and declination of these sixty-nine stars. For comparison of his results with the Königsberg places for 1840, Dr. Elkin has adopted the corrections to the latter resulting from Prof. Auwers's researches, and brought up the newly reduced places to 1885, exhibiting the comparison in the form of apparent displacements in R.A. and in declination, the place of Alcyone being made identical in both series. For the six largest cases of relative displacement there is a remarkable community both of direction and amount of apparent motion, and it is remarkable that this general drift is very similar to the reversed absolute motion of Alcyone as given by Newcomb. For two of the stars, Bessel's Nos. 14 and 35, the coincidence is, in Dr. Elkin's opinion, sufficiently close to warrant the deduction that these two stars at least do not belong to, but form only optical members of, the group. It is possible, if not probable, that the other four should also be placed in the same category. The general character of the internal motions of the group appears, however, to be extremely minute, and Dr. Elkin thinks that the hopes of obtaining any clue to the internal mechanism of this cluster seem not likely to be realized in the immediate future. Dr. Elkin also compares his results with the micrometrical measures of M. Wolf at Paris and of Prof. Pritchard at Oxford, and arrives at the conclusion that "the use of the filar micrometer for such large distances as those under consideration is likely to be accompanied with considerable casual error, and, unless great care is taken, with large systematic error. The conclusions of Messrs. Wolf and Pritchard as to the relative motions in the group have thus been unfortunately vitiated, and must be replaced by those formulated" in Dr. Elkin's most able paper.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 JULY 10-16.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on July 10

Sun rises, 3h. 57m.; souths, 12h. 5m. 1·7s.; sets, 20h. 13m.; decl. on meridian, 22° 16′ N.: Sidereal Time at Sunset, 15h. 27m.

Moon (at Last Quarter on July 13) rises, 22h. 32m.*; souths, 3h. 51m.; sets, 9h. 19m.; decl. on meridian, 8° 32′ S.

Planet.	Rises.	Souths.	Sets.	Decl. on meridian.
	h. m.	h. m.	h. m.	° ′
Mercury	6 14	13 40	21 6	15 33 N.
Venus	8 10	15 10	22 10	10 57 N.
Mars	2 21	10 42	19 3	23 59 N.
Jupiter	13 8	18 26	23 44	9 4 S.
Saturn	4 34	12 35	20 36	21 16 N.

* Indicates that the rising is that of the preceding evening.

July.	h.	
12	2	Mercury at greatest distance from the Sun.
13	20	Venus at greatest elongation from the Sun, 46° east.
14	14	Mercury stationary.

Variable Stars.

Star.	R.A.	Decl.		h. m.	
	h. m.	° ′			
U Cephei	0 52·3	81 16 N.	July 12,	22 52	*m*
o Ceti	2 13·6	3 29 S.	,, 11,		*m*
Algol	3 0·8	40 31 N.	,, 12,	21 12	*m*
S Leonis	11 5·0	6 4 N.	,, 13,		*M*
W Virginis	13 20·2	2 48 S.	,, 11,	3 0	*M*
δ Libræ	14 54·9	8 4 S.	,, 15,	23 42	*m*
β Lyræ	18 45·9	33 14 N.	,, 12,	22 0	*M*
R Lyræ	18 51·9	43 48 N.	,, 16,		*M*
δ Cephei	22 25·0	57 50 N.	,, 15,	1 0	*M*
R Pegasi	23 1·0	9 56 N.	,, 13,		*M*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
	°	°	
From Herculis	271	21 N.	Very slow.
Ophiuchus	280	14 S.	Very slow.
Near π Pegasi	329	36 N.	Swift. Red streaks.
From Andromeda	352	38 N.	Swift.

REPORT OF THE COMMITTEE OF INQUIRY INTO M. PASTEUR'S TREATMENT OF HYDROPHOBIA.

THE following is the text of this important Report to the President of the Local Government Board:—

SIR,—In accordance with the instructions contained in a letter dated April 12, 1886, from your predecessor, the Right Honourable Joseph Chamberlain, M.P., appointing us to be a Committee to inquire into M. Pasteur's treatment of hydrophobia, we beg leave to present to you the following Report.

In order to answer the several questions involved in the inquiry, we found it necessary that some of the members of the Committee should, together with Mr. Victor Horsley, the Secretary, visit Paris, so as to obtain information from M. Pasteur himself, and observe his method of treatment, and investigate a considerable number of the cases of persons inoculated by him; and, further, that a careful series of experiments should be made by Mr. Horsley on the effects of such inoculation on the lower animals. The detailed facts of these observations and experiments are placed in the Appendix to this Report; a summary of them, and the conclusions which we believe may be drawn from them, are given in the next following pages.

The experiments by Mr. Horsley entirely confirm M. Pasteur's discovery of a method by which animals may be protected from the infection of rabies. The general facts proved by them may be thus stated:

If a dog, or rabbit, or other animal be bitten by a rabid dog and die of rabies, a substance can be obtained from its spinal cord which, being inoculated into a healthy dog or other animal, will produce rabies similar to that which would have followed directly from the bite of a rabid animal, or differing only in that the period of incubation between the inoculation and the appearance of the characteristic symptoms of rabies may be altered.

The rabies thus transmitted by inoculation may, by similar inoculations, be transmitted through a succession of rabbits with marked increase of intensity.

But the virus in the spinal cords of rabbits that have thus died of inoculated rabies may be gradually so weakened or attenuated, by drying the cords, in the manner devised by M. Pasteur and related in the Appendix that, after a certain number of days' drying, it may be injected into healthy rabbits or other animals without any danger of producing rabies.

And by using, on each successive day, the virus from a spinal cord dried during a period shorter than that used on the previous day, an animal may be made almost certainly secure against rabies, whether from the bite of a rabid dog or other animal, or from any method of subcutaneous inoculation.

The protection from rabies thus secured is proved by the fact that, if some animals thus protected and others not thus protected be bitten by the same rabid dog, none of the first set will die of